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- (54) [Title of the Invention]

A COMBINED FILAMENT YARN WOVEN FABRIC

- (57) [Abstract]

OBJECT: To obtain a combined filament yarn woven fabric showing a feeling of peach skin, tension, drape and resilience.

SOLUTION: A combined filament yarn woven fabric wherein the warp is a polyester combined filament yarn consisting of multifilament different in shrinkage, the weft is a hard twist polyester yarn, characterized in that at least one component forming the combined filament yarn consisting of multifilament different in shrinkage, is a polytrimethylene terephthalate fiber.

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[Claim]

[Claim 1] A combined filament yarn woven fabric having a cover factor of 1500 to 3500, wherein the warp is a polyester combined filament yarn consisting of multifilament different in shrinkage, the weft is a hard twist polyester yarn with a twist coefficient

of 10000 to 30000, characterized in that at least one component forming the combined filament yarn consisting of multifilament different in shrinkage, is a polytrimethylene terephthalate fiber.

[0004]

[Means for solving the problem] The inventor studied intensively, and as a result, found that if specific polyester fibers are used as one of multifilament of combined filament yarn consisting of multifilament different in shrinkage, and if the combined filament yarn is used in combination with hard twist yarns, then a combined filament yarn woven fabric which is improved in the above-mentioned disadvantages and especially has a feeling of peach skin, tension, drape and resilience can be obtained. Thus, the present invention has been made. This invention provides a combined filament yarn woven fabric having a cover factor of 1500 to 3500, wherein the warp is a polyester combined filament yarn consisting of multifilament different in shrinkage, the weft is a hard twist polyester yarn with a twist coefficient of 10000 to 30000, characterized in that at least one component forming the combined filament yarn consisting of multifilament different in shrinkage, is a polytrimethylene terephthalate fiber.

[0005] In this invention, a combined filament yarn consisting of multifilament different in shrinkage, at least one of the multifilament of which is polytrimethylene terephthalate fibers, especially preferably provided as no-twist yarn or soft twist yarn with a twist coefficient ( $= \text{Twist count} \times \sqrt{\text{Fineness of yarn}}$ ) of 0 to 4000, more preferably 0 or 1500 to 4000, are used as the warp, and polyester fibers with a twist coefficient of 10000 to 30000, preferably 14000 to 27000, more preferably 17000 to 27000 are used as the weft, to form a woven fabric having twisted weft yarn, with a cover factor of 1500 to 3500, preferably 1700 to 2700. The woven

fabric obtained has a feeling of peach skin, tension, drape and resilience.

[0006] In this case, the cover factor is represented by the following formula:

Cover factor = Warp density  $\times \sqrt{\text{Fineness of warp}}$  + Weft density  $\times \sqrt{\text{Fineness of weft}}$

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[0014] Furthermore, examples of the polyester fibers used as the weft include polytrimethylene terephthalate fibers, polyethylene terephthalate fibers, polybutylene terephthalate fibers, copolyester fibers obtained by copolymerizing any of the foregoing with a third ingredient, etc. Preferred are polyethylene terephthalate fibers, which is fibers made of a polyester having ethylene terephthalate units as main recurring units, those containing 50 mol% or more, preferably 70 mol% or more, further preferably 80 mol% or more, especially preferably 90 mol% or more of ethylene terephthalate units.

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[0021]

[Example] The present invention is explained below in reference to an example, etc., though this invention is not limited to or by the example, etc. The shrinkage percentage in boiled water was measured according to the method A of JIS L 1095.

Method for producing a combined yarn consisting of multifilament different in shrinkage:

For obtaining a multifilament with low shrinkage, polytrimethylene terephthalate of  $\eta_{sp}/c = 0.8$  was spun at a spinning temperature of 265°C and at a spinning speed of 1200 m/min, to obtain

an undrawn multifilament. Then, the undrawn multifilament was drawn at a hot roll temperature of 60°C, at a hot plate temperature of 140°C, at a draw ratio of 3 times and at a drawing speed of 800 m/min, to obtain a 25d/12f drawn multifilament. The strength, elongation, modulus and elastic recovery rate at an elongation of 10%, of the obtained drawn multifilament were 3.2 g/d, 46%, 30 g/d and 98% respectively. Furthermore, the shrinkage percentage in boiled water was 11%.

[0022] The elastic recovery rate at an elongation of 10% was measured as follows.

An initial load of 0.01 g/d was applied to a sample, to elongate it at a constant rate of 20% per minute, and when the elongation reached 10%, the sample was allowed to shrink on the contrary at the same rate, for describing a stress-strain curve.

During shrinkage, the elongation remaining when the stress is lowered to 0.01 g/d equal to the initial load, is L, the elastic recovery rate at an elongation of 10% can be calculated from the following formula:

Elastic recovery rate at an elongation of 10% =  $[(10 - L)/10] \times 100(\%)$

For obtaining a multifilament with high shrinkage, polyethylene terephthalate, in which 2,2-bis{4-(2-hydroxyethoxy)phenyl}-propane was copolymerized by 10 moles based on the moles of all the glycol components, was spun and wound at a speed of 800 m/min, and hot drawn to obtain a 25d/12f multifilament (shrinkage percentage in boiled water of 22%). The two multifilaments were interlaced with each other to obtain a 50d/24f combined filament yarn consisting of multifilaments different in shrinkage with a total shrinkage percentage in boiled water of 21% and 64 entanglements.

[0023] (Example 1)

The combined filament yarn of 50d/24f consisting of multifilaments different in shrinkage, was additionally twisted by 250 T/m in S turn to twist coefficient of 1767, and A combined filament yarn consisting of multifilaments different in shrinkage containing polytrimethylene terephthalate fibers obtained. The obtained combined filament yarn was used as the warp. A polyethylene terephthalate multifilament yarn of 75d/36f was twisted at S turn or Z turn by 2700 T/m. The obtained two type hard twist yarn was used alternately as the weft. A Fabric of crepe de chine was formed by the warp and the weft.